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National Aeronautics and
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John C. Stennis Space Center
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John C. Stennis Space Center
Mishap Preparedness and Contingency Plan

Approvals

Submitted by: ***Original Signature on file*** Date: ***11/2/17***
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Document History Log

Status/ Change/ Revision	Change Date	Originator/ Phone	Description
Basic	10/2006	A.Rice ext. 8-2972	Initial Release. Formatted per SPG 1400.1, John C. Stennis Space Center Document Preparation, Numbering, and Management Guidelines and Standards.
A	04/2007	A.Rice ext. 8-2972	Ensure compliance with NPR 8621.1
B	01/2008	A.Rice ext. 8-2972	Clearly defined reporting requirements identified in section 2.4. Deleted types of working groups identified in section 4.2. Updated section 5.0 to allow SMA Director to provide support facilities. Updated Board Membership Requirements in Appendix C.
C	07/2008	A.Rice ext. 8-2972	Changed the SMA Director signature block. Included notification to the Center Public Affairs Officer in paragraph 2.1.3 and in Item 2 of Appendix A.
D	12/2008	A.Rice ext. 8-2972	Changed the Center Director signature block.
E	06/2009	D. Brady ext. 8-1187	Added Funding WBS Code for Mishap Investigations. Added NASA SMA Director as AO for Type C,D,& non-High Vis CC. Added Procedures for designated investigations by contractors.
F	06/2010	M. Rewis ext. 8-2663	Changed Center Director signature block.
F-1	06/2011	A.Rice ext. 8-2972	No update until new revision of NPR 8621.1 is released.
G	06/2012	A.Rice ext. 8-2972	Deleted SOMD section and working group section. Section 2 identified location of camera and mishap kit. Added required step to have Center personnel identified to participate in mishap investigations.
H	11/2013	A.Rice ext. 8-2972 M. Rewis ext. 8-2663	Ensure compliance with NPR 8621.1. Roles and responsibilities were expanded upon to comply with recent HQ recommendations. Changed organization name references to reflect current nomenclature.
H-1	2/26/14	S. Woolridge ext. 8-2762	Administrative change
H-2	1/12/15	S. Woolridge ext. 8-2762	Administrative change. Change Incident Reporting Information System (IRIS) to NASA Mishap Incident System (NMIS)

H-3	2/26/2015	S. Woolridge ext. 8-2762	Change NASA Mishap Incident System (NMIS) to NASA Mishap Information System (NMIS)
I	8/24/2016	K. Shaw ext. 8-3025	Throughout: 1. Incorporated SCWI-8710-0003 SSC NASA Mishap Information System (NMIS) Process into this document. 2. In section 1.5, deleted references to obsolete documents and added next of kin notification reference. 3. In section 3.1.1, made the Center Director responsible for the Mishap Preparedness and Contingency Plan (MPCP) per the updated NPR. 4. In 3.6, the policy on mishap funding was expanded. 5. In 2.0, moved the mishap definitions to the beginning of the document. 6. In 3.1, updated responsibilities to reflect changes in the NPR and OSHA reporting requirements. 7. In 3.1.6, added a definition, responsibilities and guidelines for deployment of the IRT. 8. In 3.2, updated OSHA reporting requirements into the mishap flow. 9. Used the blanket term Investigating Authority (IA) throughout and Appointing Official (AO). 10. In 4.2, delineated the IA and AO for different types of mishaps. 11. Added 7.0, a section on Causality Notification and Medical Jurisdiction which combines information that was both in the body and appendix. 12. Updated Acronyms, flowcharts and Appendix A to reflect the changes in the rest of the document.
J	10/1/2017	K. Shaw ext. 8-3025	The majority of changes are in response to the 2017 REDAA and IFOSA audit conducted by OSMA. 1. Changed Review Date to Expiration Date in the header per NPR 8621.1 2. Added precedence of the Center MPCP and Emergency Management Plan in 1.1 3. Added SPLN-8838-0001 to the references 4. Updated mishap definitions in 2.0. 5. Updated non-NASA mishaps in 2.2 6. Added off-site mishaps in 2.5 7. Added responsibility of funding the IRT and IA in 3.1.1 8. Added additional responsibilities to the SMA Director in 3.1.2

			9. Added a definition of the cognizant safety office in 3.1.2 10. Added additional responsibilities for the Center Mishap Manager in 3.1.3 including ensuring knowledge of help for NMIS, review of project/program plans/ forwarding project/program MPCPs to OSMA and uploading appointed IA investigation reports to NMIS in 3.1.3 11. Added responsibility of ensuring funding of IRT and IA and review of project/program MPCPs in 3.1.4. 12. Added Program/Project Manager responsibilities in 3.1.5. 13. Added responsibilities to calculate direct cost, review cases for closure, and training for NMIS POCs in 3.1.6. 14. Added IRT lead responsibilities in 3.1.7 15. Added IRT training requirements and responsibilities in 3.1.7 and 3.1.8. 16. Added project/program MPCP requirements in 3.2 17. Added additional notification details in 3.3.1 18. Added coordination of IRT with CO before contractor property impoundment in 3.3.4 19. Added to not turn over witness statements to contractors in 3.3.5 20. Added website for civil servant drug testing in 3.3.6 21. Changed appointment of IA from 2 to 7 working days in 3.3.11. 22. Added note about providing a copy of the witness statement to the witness negates privilege in 3.4.2g 23. Added a specific room for impoundment in 3.4.2f 24. Updated mishap funding in 3.6 25. Added training of IA and additional IA responsibilities in in 4.3 26. Added additional Type A and B mishaps and High Vis Close requirements in 4.4 27. Added Test Induced Damages, Direct Cost Calculation, Closure Checklist, IRT Impound Inventory and Release Form, Type C and D Mishap and Close Call Immediate Response and Investigations flowcharts, a Civil Servant IA

			Checklist, and an Aircraft Investigating Authorities to the Appendices.
J-1	10/19/2018	M. Scott Ext. 8-1537	Administrative changes

Table of Contents

1.0 PREFACE

1.1 Introduction

In accordance with NPR 8621.1, *NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping*, the Director of John C. Stennis Space Center (SSC) is responsible for ensuring plans are in place to report, investigate, and document National Aeronautics and Space Administration (NASA) mishaps and close calls. In addition, the *SSC Mishap Preparedness and Contingency Plan (MPCP)*, SPLN-8621-0003, shall be consistent with SPLN-1040-0006, *SSC Emergency Management Plan.* SPLN-1040-0006 shall take precedence as long as any emergency personnel remain as the Incident Commander (IC). SPLN-8621-0003 takes precedence over project/program plans for NASA mishaps at SSC.

1.2 Purpose

The purpose of this plan is to state NASA SSC, SSC resident agencies, and contractor roles and responsibilities for responding to all mishaps at SSC.

1.3 Scope

This document establishes the responsibilities for the reporting, response and investigation of mishaps at SSC. The notification requirements of this document are supplemented by SPLN-8621-0004CL, *SSC Mishap Preparedness and Contingency Plan Contact List*, which contains the contact information required in support of notifications of mishaps to organizations, projects, and programs. SPLN-8621-0004CL contains Personally Identifiable Information (PII) and is available as needed from the SSC Safety and Mission Assurance (SMA) Directorate.

1.4 Applicability

This plan applies to NASA SSC and its contractors as defined in contracts. All NASA SSC civil servant and contractor mishaps and close calls shall be reported as defined herein and documented in the NASA Mishap Information System (NMIS). SSC resident agencies and tenants report mishaps as defined in the applicable Space Act Agreement(s). They are not a part of this mishap program.

1.5 References

All references are assumed to be the latest version unless otherwise indicated.

a. NPR 3792.1, *NASA Plan for a Drug-Free Workplace*

b. NPR 8621.1, *NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping*

c. SPLN-1040-0006, *SSC Emergency Management Plan*

d. SPLN-8621-0004CL, *SSC Mishap Preparedness and Contingency Plan Contact List*

e. SPLN-8838-0001, *SSC Fire Protection/Prevention Plan*

f. SPR 3790.1, *SSC Notification and Assistance to Next of Kin*

1.6 Cancellation

SPLN-8621-0003, Revision I dated September 2016

1.7 Effectivity

This plan is effective immediately and will remain in effect for five years or until canceled by the Center Director.

1.8 Changes

The SSC SMA Director is responsible for maintenance of this document. Requests for changes shall be forwarded in writing to SSC SMA for review, coordination, and action by appropriate organizations. The SSC SMA Director shall submit the latest released version to the Office of Safety and Mission Assurance (OSMA) at NASA Headquarters (HQ) within two weeks of release.

2.0 MISHAP DEFINITIONS

2.1 NASA Mishaps and Close Calls

2.1.1 NASA Mishaps

A NASA mishap is an unplanned event that results in at least one of the following:

a. Occupational injury or occupational illness to non-NASA personnel, caused by NASA operations

b. Occupational injury or occupational illness to NASA personnel caused by NASA operations

c. Destruction of or damage to NASA property, public or private property, including foreign property, caused by NASA operations or NASA-funded development or research projects

d. NASA mission failure before the scheduled completion of the planned primary mission

At SSC, NASA personnel are NASA employees and NASA prime contractors and subcontractors. Non-NASA personnel are visitors to SSC and employees of SSC resident agencies and tenants.

2.1.2 Close Call

A close call is an event in which there is no injury or only minor injury requiring first aid, no damage or minor damage (less than $20,000) to equipment or property or both, but which possesses a potential to cause a mishap. Close calls are also part of the mishap program and plan.

2.2 Not Considered NASA Mishaps or Close Calls

2.2.1 The following are not considered NASA mishaps or close calls:

a. Illnesses or fatalities resulting from natural causes or those unrelated to the work environment when disease, not injury, is the cause of lost time (e.g., diabetes and resultant complications, loss of vision)

b. Intentional self-inflicted injuries or fatality

c. Injuries or fatalities resulting from altercations, attack, assault—unless incurred in the performance of official duties such as criminal investigations—or homicide

d. Destruction of or damage to any property (public, private, or Government) onsite at a Center or involving NASA property on grounds outside Center property as a direct result of any of the following:

(1) weather conditions such as hurricane, lightning, tornado, high winds, dust storm, tidal wave, tsunami, waterspout, or ice or snow loads,
(2) natural phenomena such as flood, landslide, earthquake, meteoroid landing, or volcanic eruption, wild fire,

(3) vandalism, riot, civil disorder, or felonious act such as arson or, in some cases, theft

e. A malfunction or failure of component parts that are normally subject to fair wear and tear and have a fixed useful life that is less than the complete system or unit of equipment. This only applies if there was adequate preventative maintenance and the malfunction or failure was the only damage, and the sole action is to replace or repair that component. In addition, there must not have been a malfunction or failure of a component part that resulted in damage to another component, the facility or injury to personnel

f. Accidents involving aircraft operated as civil use, owned by civil operators, and accomplishing contract air missions for NASA where there is no NASA property damage or Federal employee injury

2.2.2 A test failure involving damage to equipment or property as a result of testing is **not** a NASA mishap provided **all** the statements below are true. It must be true that:

a. There was no injury, illness or fatality

b. There was no damage to public property, other Government agency property or private property

c. The hazardous hardware debris did not leave the test cell, test chamber, protected facility, pre-determined debris field, or test range and the release could not have resulted in injury, illness, or death

d. The facility and test equipment functioned properly except when the facility or test equipment functionality itself is being tested as part of approved test objectives

e. Damage is limited to the test article and test instrumentation

f. The risk of damage was formally documented and accepted by signature before the test

g. The type or general category of test-induced damage (e.g., water damage, structural failure, or thermal overload) was documented as a designed and intended or potential outcome of the test, and the risk of the test-induced damage, including related uncertainties, was formally accepted by the appropriate authority

Depending on the test, the appropriate authority for risk acceptance may be the owner of the damaged property or the person responsible for funding replacement of damaged equipment (e.g., the owner of the test article, test support equipment, test cell, chamber, pad, or protected facility, or the range, project, or program manager). Further details about test induced damage can be found in Appendix A.

2.3 Types of NASA Mishaps and Close Calls

Mishaps and close calls are unplanned events and are classified based on the result considering the type of injury, amount of property damage and/or impact to the mission. If there is more than one impact the most severe classification is used to classify the mishap or close call. The different types of mishaps and close calls are listed below.

a. **Type A Mishap**
   (1) occupational injury or illness resulting in a fatality, a permanent total disability, or a total direct cost of mission failure
   (2) property damage of $2,000,000 or more
   (3) a crewed aircraft hull loss, or an unexpected aircraft departure from controlled flight for all aircraft except when departure from controlled flight has been pre-briefed (e.g., upset recovery training, high angle of attack envelope testing, aerobatics, or out of control flight for training) or mitigated through the flight test process inherent at each Center.

b. **Type B Mishap**
   (1) occupational injury or illness resulting in a permanent partial disability
   (2) the hospitalization for inpatient care of three or more people within 30 workdays of the mishap
   (3) total direct cost of mission failure and property damage equal to or greater than $500,000 but less than $2,000,000.

c. **Type C Mishap**
   (1) nonfatal Occupational Safety and Health Administration (OSHA) recordable occupational injury or illness resulting in days away from work, restricted duty, or transfer to another job beyond the day or shift on which it occurred
   (2) hospitalization for inpatient care of one or two people within 30 workdays of the mishap
   (3) total direct cost of mission failure and property damage of at least $50,000 but less than $500,000.

d. **Type D Mishap**
   (1) An event causing any nonfatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap
   (2) total direct cost of mission failure and property damage of at least $20,000 but less than $50,000.

e. **Close Call**
   (1) no injury or only minor injury requiring first aid
   (2) no equipment/property damage or minor equipment/property damage of less than $20,000
   (3) possesses a potential to cause a mishap.

2.4 High-Visibility Mishap or Close Call

A high-visibility mishap or close call is a mishap or close call, regardless of the amount of property damage or personnel injury, that the Administrator, Chief Safety and Mission Assurance in the OSMA, Center Director, or Center SMA Director judges to possess a high degree of safety risk, programmatic impact or public, media, or political interest including, but not limited to mishaps and close calls affecting flight hardware or software, or completion of critical mission milestones.

2.5 Off-site Mishaps

2.5.1 SSC does not conduct any operations off-site with the exception of activities under the Synergy Achieving Consolidated Operations and Maintenance (SACOM) Contract at the Michoud Assembly Facility (MAF). Under the SACOM contract, SSC and Marshall Space Flight Center (MSFC) activities occur at both MAF and SSC with exchange of property and personnel back and forth on a daily basis. The protocol to be followed shall be if a mishap occurs at SSC, regardless of personnel affiliation or property ownership, the mishap procedure will follow SPLN-8621-0003. If the mishap occurs at MAF, the MSFC Mishap program will be followed. If the personnel or property are in transit when a mishap occurs, the most recent Center/facility where the employee or property was located shall determine the procedure to be used until the personnel and/or property arrive at the second Center/facility. Any changes to this agreement shall be agreed to by both the MSFC and SSC SMA Directors in writing.

2.5.2 Offsite mishaps involving SSC civil servants or property will always be monitored until conclusion, but the default Investigating Authority (IA) depends on the location of the mishap. For mishaps at another Center, the Center where the mishap occurs shall be considered the IA. At contractor locations with an approved mishap or equivalent plan, the IA shall be the contractor. Mishaps that are not one of these two cases, such as an injury of a civil servant on travel to a supplier site where there is no MPCP or other incident management plan in place, the mishap will be governed by this plan. If appropriate, depending on the nature of the mishap or close call, the Interim Response Team (IRT) will travel to the scene. If necessary, travel arrangements will be made to support IRT and/or mishap investigation activities. The evidence gathering and investigation process will remain the same as for onsite mishaps and close calls.

3.0 SUMMARY OF SSC PLAN IMPLEMENTATION

3.1 Roles and Responsibilities

3.1.1 The Center Director shall:

a. Ensure the development of the Center MPCP in conformance with NPR 8621.1

b. Fund and ensure the implementation of the SSC MPCP, including IRT and IA responsibilities

c. Serve as the Appointing Official (AO) of the IA for Type A mishaps, if delegated by the Administrator, Type B mishaps, and Agency-declared high-visibility mishaps and close calls

d. Ensure concurrence is obtained from the NASA OSMA and the Chief Engineer on the Mishap Investigation Board (MIB) membership for Type A and B mishaps and Agency-declared high-visibility mishaps and close calls

e. Report immediately to the Administrator, by telephone or email, any work-related fatality or serious injury or illness of a NASA employee, resident non-NASA Federal employee, or resident contractor (a NASA contractor whose primary place of business is on or near a NASA Center or NASA-owned facility)

f. Report by telephone or e-mail to the Administrator within 24 hours of learning of a NASA Type A or Type B mishap or high-visibility mishap or close call

g. Ensure the next of kin notification takes place for NASA SSC employees per SPR 3790.1 in the event of a fatality or serious injury/illness

h. Endorse (or designee endorses) all Type A and B mishaps and Agency-declared high-visibility mishaps and close calls

3.1.2 The SSC SMA Director shall:

a. Serve as the designee for the Center Director, when deemed necessary

b. Serve as the AO of the IA for Type C and D mishaps, close calls and Center-declared high-visibility mishaps and close calls

c. Report Type A and B mishaps and suspected Agency-declared high-visibility close calls to OSMA (1-321-861-2312, or, if no answer, 1-866-230-6272) within one hour of the incident. Include in the report the Center name, location of incident, time of incident, number of fatalities, the contact person and telephone number and, if known, the number of hospitalized employees, type of injury, and the type and estimate of damage

d. Report mishaps to SSC senior management as required to fulfill their responsibilities

e. Report mishaps to the Office of Inspector General (OIG) and the Center's Office of Chief Counsel if it is suspected that a mishap resulted from a criminal activity

f. Report NASA SSC employee injuries in accordance with 29 Code of Federal Regulations (CFR) 1904.39 to OSHA within eight hours of a work-related mishap involving an employee's death, and within 24 hours after the in-patient hospitalization of one or more employees or an employee's amputation or loss of an eye as a result of a work-related incident; OSHA notification is required for any fatality that occurs up to 30 workdays after the respective mishap and any in-patient hospitalization of one or more employees or an employee's amputation or loss of an eye up to 24 hours after a work-related incident

g. Ensure the Center MPCP is developed and maintained

h. Approve the Program/Project MPCPs after ensuring that the Program/Project MPCPs have appropriate SMA review

i. Assure funding is available to carry out IRT and IA responsibilities

j. Ensure the Center MPCP is practiced at least once a year. Practice is intended to mean tabletop and/or full enactment simulations where possible

k. Ensure lessons learned are developed and submitted to the Agency and Center lessons learned database as required

l. Ensure a Center Mishap Manager is identified

The cognizant safety office as referred to in NPR 8621.1 is the SMA Directorate at SSC and includes employees that enact this plan: SMA Director, Center Mishap Manager and IRT.

3.1.3 The Center Mishap Manager shall:

a. Keep this document updated with federal, NASA and SSC changes in polices and requirements

b. Ensure all personnel who manage incidents in NMIS are informed of where the help resources for NMIS execution are located

c. Ensure all IA members take and refresh training as required

d. Ensure OSHA Forms 300, 300a, and 301 are accurately maintained and form 300a is posted annually during the entire time period of February 1 to April 30

e. Keep an updated list of the Center employees with the current training and experience in mishap investigations that shall reside in SSC SMA

f. Serve as the final approver of Type C and D mishaps and close calls in NMIS

g. Serve as the SSC approver for NMIS accounts

h. Facilitate the process of mishap lessons learned development and submittal

i. Review and provide concurrence of all Program/Project MPCPs to ensure all required Program/Project specific information is included that is not covered in the Center MPCP

j. Ensure copies of Center and Program/Project MPCPs are forwarded to the OSMA Mishap Investigation Program Executive within five (5) working days of plan approval

k. Ensure mishap investigation reports of appointed IAs are uploaded NMIS

3.1.4 The Program/Project Manager shall

a. Be responsible for the implementation and funding of the Program/Project MPCP in coordination with the Center MPCPs and appropriate NASA HQ Offices, which include, at a minimum, Mission Directorate Associate Administrator (MDAA), General Counsel, OSMA, HQ Office of Communications (OCOM), and Office of International and Interagency Relations (OIIR), before its final approval

b. Be responsible for the development of the Program/Project MPCP with the contents listed in section 3.2

c. Ensure the Program/Project MPCP is exercised as required in the Program/Project MPCP

3.1.5 SSC Medical Clinic Personnel shall:

a. Develop internal procedures necessary to support and implement this plan within their area of responsibility

b. Enter the initial report of all injury/illness data, initial visit information and follow-up visit information into the NMIS database within 24 hours of a clinic visit or follow-up visit

c. Complete all the required tabs within the injury/illness module for each injury/illness case in NMIS

3.1.6 SSC NMIS Mishap Points of Contact (POC) shall:

a. Ensure the initial report of each mishap or close call is entered into the NMIS database within 24 hours of the occurrence of the mishap or close call

b. Ensure all initial case data has been entered into the NMIS database within ten (10) working days of occurrence of close calls and mishaps

c. Ensure all information recorded in NMIS is updated as new information becomes available and, at a minimum, verify information is up to date once every 30 days until the investigation and corrective actions are complete and the case is ready for closure

d. Calculate the direct cost of the mishap using the worksheet in Appendix B and attach it to the NMIS case

e. Submit cases for closure once findings have been identified, the associated corrective actions have been completed and all of the information, including objective evidence for each corrective action, has been entered in to NMIS

f. Enter respective contract work hours data into NMIS by the tenth day of each month. All work hours data shall reflect actual work

g. Complete the following training, if also doing investigations of Type C and D mishaps and close calls, once during tenure as an investigator except as noted in italics below:

(1) Overview of Mishap Investigations (SATERN Electronic Course - SMA-002-07)
(2) Mishap Investigation Roles and Responsibilities (SATERN Electronic Course - SMA-002-08)
(3) Completing the Investigation and Mishap Report (SATERN Electronic Course - SMA-002-09)
(4) Introduction to Root Cause Analysis (SATERN Electronic Course - SMA-002-10) (*every two years*)
(5) Introduction to Human Factors In Mishap and Close Call Investigation (SMA-001-07)
(6) Interim Response Team Training (SATERN Electronic Course - SMA-002-11)
(7) NASA Root Cause Analysis (SATERN Classroom Instruction - SMA-SAFE-OSMA-4003 or SATERN Electronic equivalent SMA-002-14) (*every five years*)
(8) Human Factors in Mishap Investigation (SATERN Classroom Instruction - SMA-SAFE-OSMA-4004 or SATERN Electronic equivalent SMA-002-15) (*every five years*)

h. Become familiar with how NMIS functions and stay current with any updates to the NMIS software. Help for NMIS can be found on the NMIS website, https://nsc.nasa.gov/nmis. Help is also available through the NASA Safety Center (NSC) Help Desk email and phone number: NASA-NSC-Help@mail.nasa.gov and 216-433-9NSC

3.1.7 The IRT Lead shall:

a. Be a civil servant

b. Ensure the IRT members complete and update training as required

c. Provide additional SSC specific training to the IRT

d. Ensure go-kits are replenished and updated as needed/requested

e. Provide exercises/simulations of the mishap process to the IRT as needed/requested

f. Plan and participate in Center mishap exercises as needed/requested

g. Take applicable additional Federal Emergency Management Agency (FEMA) National Incident Courses and explosives training as needed

h. Ensure there are sufficient IRT members on site at SSC during normal working hours and for special events

3.1.8 IRT

a. The IRT has the responsibility to preserve evidence, including the mishap scene, until the IRT is relieved by the IA. The IRT shall have the following training every three years except as indicated below in italics:

(1) Overview of Mishap Investigations (SATERN electronic course SMA-002-07)
(2) Mishap Investigation Roles and Responsibilities (SATERN electronic course SMA-002-08)
(3) Completing the Investigation and Mishap Report (SATERN electronic course SMA-002-09)
(4) Introduction to Root Cause Analysis (SATERN electronic course SMA-002-10) (*every two years)*
(5) NASA Interim Response Team Training (SATERN electronic course SMA-002-11)

b. The IRT members shall be civil servants and funded by each member's organization. The IRT materials shall be funded by the SSC SMA Directorate. The IRT is responsible for the following duties as required:

(1) Gathering, preserving and impounding physical evidence
(2) Ensuring, through the contracting officer, that agreements with contractors are in place before impounding evidence
(3) Conducting confidential interviews
(4) Collecting written statements whenever possible
(5) Generating written and photo documentation
(6) Gathering digital evidence
(7) Maintaining custody of all evidence until the start of the investigation

(8) Releasing evidence to the IA once they are identified using the Impound Inventory and Release Form in Appendix D
(9) Informing SSC SMA and the Center Public Affairs Officer (PAO) located within the Office of Communication of any hazards at the mishap site
(10) Assisting the PAO and Center Director with release of information to the media
(11) Reporting to SSC SMA all initial information at the scene of the mishap when it is feasible to do so
(12) Assessing the mishap for preliminary classification and providing a timely recommendation to the SSC SMA Director
(13) Releasing the scene to the IA when appointed or back to the responsible organization when an incident is determined not to be a NASA mishap or close call or the responsibility for the mishap or close call has been determined to be a NASA contractor

A checklist to be used as a tool for IRT activities is located in Appendix E.

3.2 Program and Project MPCPs

Program/Project MPCPs shall be considered a supplement to the Center MPCP. The two plans shall be used as a pair to execute the Center mishap program in conjunction with considerations of the program or project. In case of conflict, the Center MPCP shall take precedence. Note that there are no Program/Project personnel on the SSC IRT. All IRT activities are led and executed by the SSC IRT as explained in SPLN-8621-0003. Properly trained federal employees may be asked to assist in IRT activities by the IRT lead. Program/project MPCPs shall include:

a. Acknowledgement that there is a requirement to notify, report, investigate, and record mishaps and close calls that fall within Program/Project jurisdiction per the Center and project/program mishap plan

b. A reference to SPLN-8621-0003 including a statement that SPLN-8621-0003 takes precedence over Program/Project plans in cases of conflict

c. Special procedures to be communicated to the emergency response personnel and the IRT that are not covered in the Center MPCP or Center Emergency Management Plan (e.g., identification and handling of hazardous materials unique to the project)

d. Existing memoranda of agreement with international, national, state, and local organizations

e. Critical Program/Project milestones upon which contingency plan implementation may be necessary. Examples may include, but are not limited to, manufacture and testing activities, launch operations, mid-course corrections or in-situ vehicle maintenance, crew loss or debilitation, approach and landing operations, or loss of mission objectives

f. International, national, state, and local organizations and agencies that may take part in debris collection; identification of roles and responsibilities for each organization; and POCs

g. Other Government agencies' resources possibly needed during a Type A or Type B mishap or high-visibility mishap or close call investigation; POC and contact information for each of these agencies; procedures to acquire agency assistance; and probable roles and responsibilities for each agency (e.g., FEMA, National Transportation Safety Board (NTSB), Department of Defense, Federal Aviation Administration (FAA), or Department of Justice)

h. The names of key personnel from OCOM and OIIR to be notified of all Type A and Type B mishaps

i. The names and contact information of key Program/Project personnel to be notified of a mishap or close call

j. Acknowledgement and identification of funding support for mishap and close call investigations

k. A frequency for exercising the project/program MPCP. If not noted the frequency shall be once a year, as is in this plan

Any element from 3.2 a-k above not included in the Program/Project MPCP shall be noted as not applicable with rationale. The investigation and debris collection process shall be as described in SPLN-8621-0003. SSC does not have international operations. Therefore, additional procedures and agreements for international partners are not needed. Projects/programs involving SSC owned aircraft shall follow the processes in SPLN-8621-0003. Program/Project MPCPs shall be approved by the SSC SMA Director who shall ensure that the appropriate SMA review is executed.

3.3 Summary of Mishap Response Sequence

The mishap response sequence is described below. It is also summarized in the flowchart in Appendix F for Type C and D mishaps and close calls.

3.3.1 In the event of a known or suspected mishap, formal notification shall take place within 24 hours. Contractors shall make formal notification to the Contracting Officers Representative (COR) and civil servants shall make notification to their supervisors. Supervisors and CORs shall notify the SSC SMA Director. In addition, all incidents shall be recorded in NMIS within the 24 hour window. If the mishap involves a program or project, the applicable mishap plan and notifications shall be implemented. If the program or project does not have a separate mishap plan, the procedures within this document and applicable reference documents shall be

followed. Regardless of location, program, or project, SSC mishaps shall be responded to by the SSC IRT, if appropriate based on 3.3.4 below.

In the event of a Type A or B mishap, positive notification by phone shall take place as soon as possible to the COR or supervisor as appropriate who will immediately notify the SMA Director. One hour is the preferable notification window for these types of mishaps to ensure the Agency reporting requirements can be fulfilled.

The following information shall be reported in notification emails for all mishaps regardless of type:

a. Classification Type

b. Date and Time of Mishap

c. Specific Location (the general location will be assumed to be SSC unless otherwise indicated)

d. Personnel Injury (include the number of fatalities and hospitalizations, if applicable)

e. Estimated Property Damage

f. Initial Description of the Event

g. Background

h. The Reporter Name and Phone Number

3.3.2 In accordance with any specific mishap plan, the responsible organization/supervisor, along with the emergency response personnel, security personnel, and/or SSC SMA personnel, shall take immediate action to prevent further injury to personnel and/or damage to any property and secure the site. If deployed, the IRT personnel shall bring the IRT go-kit, including a camera, to the scene with them. The IRT shall not enter the site until all hazards have been controlled, all injured parties are considered stable by emergencies services, and the site is considered secure by the IC.

3.3.3 The SSC SMA Director will inform the Center Director and the Center Office of Communications as soon as possible after emergency response has been initiated. For Type A mishaps, Type B mishaps, and high-visibility mishaps and close calls, the NASA OSMA Mishap Investigation Program Executive shall be notified within one (1) hour of the occurrence. The Mishap Investigation Program Executive's number is (321) 861-2312. The after-hours NASA HQ Number is (866) 230-6272 if there is no answer at the first number.

3.3.4 The IRT Lead is informed of mishaps and close calls by security. The deployment of the IRT may then be obvious based on the severity of the incident. The IRT Lead can make this determination but must inform the SMA Director of deployment as soon as feasible for concurrence. If there is a question of deployment, the SSC SMA Director shall make the final determination. In addition, the SSC SMA Director can deploy the IRT at his/her discretion. The following minimum deployment shall be used as a guide by the IRT:

a. Any incident immediately determined to be Type A, B, or high-visibility close call

b. Any incident with an unclear rating 30 minutes after the incident occurs

c. NASA Property damage greater than $50,000

d. Any of the following that may not fit the criteria above:

(1) Fire
(2) Explosion
(3) Chemical exposure
(4) Hospitalization, whether admitted or not, of one or more NASA employees or contractors

The IRT does not need to be deployed for:

a. Minor car accidents or “fender benders” without injuries

b. Heat or cold stress cases

c. Injuries requiring first aid only

The IRT shall impound all appropriate data, records, equipment, and facilities that may be involved in the mishap to prevent their unauthorized use or modification, with the support of security and a supervisor. Unless there are applicable agreements in place prior to the mishap, the IRT will coordinate with the contracting officer before impounding contractor data or property and interviewing contractor employees. The deployment of the IRT does not change contractor investigation responsibilities for Type C and D mishaps and close call cases.

3.3.5 The IRT shall not enter the scene until it is secured by the IC. Within this limitation, as soon as possible after the mishap occurs, the IRT or other authorized SSC SMA civil servant personnel shall request initial written statements from all persons who were involved in or who witnessed the mishap, or document verbal accounts from such persons. The witness statement form in Appendix I shall be used if at all possible. The IRT shall not turn over witness statements to contractors. If the mishap investigation becomes the responsibility of a contractor, the contractor will need to collect their own witness statements.

3.3.6 If the mishap results in a fatality, personal injury requiring immediate hospitalization, or any mishap with estimated damage in excess of $10,000 to Government or private property, the supervisor shall initiate mandatory drug testing per NPR 3792.1, *NASA Plan for a Drug-Free Workplace.* NASA supervisors shall go to https://www.nssc.nasa.gov/drugtesting and follow the guidelines for drug testing NASA employees. NPR 3792.1 states that an employee shall be subject to drug testing if their actions at or about the time of the incident provide a reason to believe that such action(s) may have caused or contributed to an accident or cannot be completely discounted as a contributing factor to the accident. This applies to NASA employees only. Contractors and resident employees shall be drug tested according to contract, Space Act Agreements, and/or company/organizational requirements.

3.3.7 If there is an NASA employee fatality, hospitalization, loss of eye or amputation, the SSC SMA Director shall notify the OSHA per 3.1.2f.

3.3.8 The initial report of each mishap or close call shall be entered into the NMIS database within 24 hours of the occurrence of the mishap or close call by the NMIS POC of the employing organization. If the employing organization does not have access, they can use the "Report an Event" option at https://nmis.sma.nasa.gov/. Form SSC 1627 can also be submitted to SSC SMA for upload and input into NMIS.

3.3.9 The Center Director shall report, by telephone or e-mail, to the Administrator within 24 hours of learning the instance of a NASA Type A or Type B mishap or high-visibility mishap or close call. The Center Director shall inform the NASA Administrator of a work-related fatality or serious injury or illness of a NASA employee, resident non-NASA Federal employee, or resident contractor (a NASA contractor whose primary place of business is on or near a NASA Center or NASA-owned facility) at the earliest opportunity by telephone or email.

3.3.10 The Center Director shall coordinate release of all information to the press and the public via the PAO within 48 hours, including any notice of potential hazards. The NASA HQ OCOM must approve the release of all information related to NASA Type A and B mishaps and Agency-declared high-visibility close calls prior to release to the press or public.

3.3.11 Within 48 hours of a mishap or close call, the AO shall identify a provisional IA, if an IA is to be appointed. The IA shall be formally appointed within seven workdays from the mishap or close call. SSC SMA shall assist the IA in fulfilling their responsibilities. The contractor shall be the default IA if the mishap or close call is a contractor onsite injury or illness or the contractor caused property damage classified as a Type C or D mishap or close call, unless specifically directed to do otherwise by NASA.

3.3.12 The IA, whether civil servant or contractor, shall investigate the case, ideally until a root cause is found. Corrective actions shall be generated and implemented. Once the corrective actions are implemented and all the supporting information and objective evidence for each

corrective action is provided, the mishap case shall be submitted for closure within NMIS. Closure in NMIS by the Mishap Manager indicates approval of the investigation for Type C and D mishaps and close calls without an appointed IA. More information about investigations is provided in sections 4.0.

3.4 SSC Mishap Safeguarding

3.4.1. The responsible organization's supervisor, along with security, emergency response and SSC safety, shall take all possible actions to prevent additional injury to personnel and damage or loss of equipment and property.

3.4.2 In the event of an SSC actual or suspected mishap, the SSC SMA Director, using IRT and SMA personnel, has the responsibility and authority to ensure any or all of the steps below are taken to safeguard the scene and evidence, depending on the type and scope of the mishap, until such time that an IA has been appointed. The IRT, with additional trained personnel, if requested, shall:

a. Activate and/or verify activation of all applicable recording devices such as video recording cameras, data acquisition systems, etc. to capture post-event data

b. Establish and maintain a time-based action and activity list to record events as they happen during and after the safeguarding process, until the IA is established

c. Take preventive measures and any other appropriate actions to avoid recurrence, continuance or re-initiation of the mishap fallout

d. Secure the scene of the mishap against action that could impair the investigation, disturb the area, or destroy configuration integrity. The IRT shall not allow any disruption of mishap area unless necessary for safeguarding

e. Activate an incident command center near the mishap and/or the Emergency Operations Center (EOC) when appropriate

f. Impound and protect equipment, facilities, records, and data (paper, work instructions, electronic log books, tracking books, electronic data, etc.) related to the mishap.

g. Identify witnesses to the mishap event(s) and record their statements using voice recording equipment if available, and written/typed otherwise

h. Submit to the IA the impounded data as well as expediting electronic data to the appropriate Center organization for data processing when requested by the IA.

i. Assist in and/or authorize additional actions required to support proper handling of mishap site and evidence safeguarding.

In the event data must be recovered from compromised equipment, the SSC Center Operations Directorate and Office of the Chief Information Officer shall coordinate assistance from available resources to secure such data. An impoundment location will be determined based on the location and physical requirements of the items impounded. If appropriate, based on the type and size of evidence, B1100 Rm 307B shall be used as the impoundment area. As a minimum, any impoundment area will be a secure location that is approved by the Center Director, SSC SMA and the SSC Security Office. Anyone accessing an area containing impounded material must be approved by the Center Director or SSC SMA Director.

Where possible, written witness statements should be collected on the witness statement form in Appendix I that includes the statement of privilege. Only the IRT and other SSC SMA civil servants, as requested by the IRT, shall impound data and collect witness statements. Witness statements shall not be turned over to contractor investigators. Neither the IRT nor the IA shall provide a copy of the witness statement to the interviewee. Provision of a copy of the witness statement to the interviewee will negate privilege.

3.4.3 Impounded items and facilities will be released by the IRT to the IA once established. All impounded items, witness statements and any other evidence regarding the mishap will be transferred to the IA except that witness statements shall not be given to contractors. When the impounded property is no longer needed, the IA shall release the property to the property owner. If repairs or modifications are determined through the IA investigation to be required before returning equipment or facilities to safe use, the release of impounded items should include a letter stating what is required. Physical evidence that needs to be stored at the conclusion of an investigation, including witness statements, shall be given to the SMA office for storage in B1100 Room 307B. The chain of custody shall be documented for all impounded items from the time of impoundment through release using the form in Appendix D.

3.5 Multiple Mishaps

If the Center Director or SMA Director determines that several events are manifestations of the same mishap, they will be investigated as one mishap. If it is determined that related events (multiple mishaps) of the mishap situation are separate and distinct, separate investigations may be initiated for each event.

3.6 Mishap Investigation Funding

3.6.1 Center-Related Mishaps

Center-related mishaps include, but are not limited to, facility construction, facility maintenance, industrial, ergonomic, and facility slips, trips, and falls. Contractor Center-related mishap investigations shall be funded by the contractor as stated in the contract. The source of funding for all Center-related mishap investigations where NASA has taken investigation responsibility shall be Center Management and Operations (CMO). For clarity, SSC NASA civil servant investigation labor shall be borne by the home organization. Additional expenses like labor for IA members outside of NASA SSC civil servants, travel, facilities, Information Technology, and equipment will be coordinated by the SMA Director with the Center Account Manager for CMO funding. SMA staff shall support purchasing in the required timeline unless otherwise stated in appointment letters or other documents.

3.6.2 Project/Program Related Mishaps

Investigations of Program/Project mishaps directly related to flight or test hardware and ground support and special test equipment fabrication, processing, test, and inspection shall be funded by the Program/Project and agreed to in Program/Project plans. This does not include SSC IRT activities.

4.0 MISHAP INVESTIGATIONS

4.1 General

All investigations will generally be conducted as described below. Additional requirements for Type A and B mishaps and Agency-declared high-visibility close calls are in section 4.4. All SSC mishap investigations shall be conducted in accordance with the requirements of NPR 8621.1, *NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating and Recordkeeping* as applicable. Type C and D mishaps and close call investigations are summarized by the flow chart in Appendix G.

4.2 Appointment and Responsibilities of All Investigating Authorities

4.2.1 These AO responsibilities include incidents that occur onsite at SSC or offsite involving SSC activities in accordance with 2.5. The AO for Type A mishaps shall be the Administrator unless delegated to another official, for instance the Center Director. The Center Director shall be the AO, or delegate the responsibility, for all Type B mishaps. The SSC SMA Director shall be the AO, or delegate the responsibility, for all Type C and D mishaps and close calls. The IA role of Type C and D mishaps and close calls has been distributed as follows:

a. The contractor is the default IA for all contractor Type C and D mishaps and close calls unless specifically directed to do otherwise by NASA. The Center Mishap Manager will make the final approval of the investigation and corrective actions in NMIS by closing the case.

b. For close calls and Type C and D mishaps caused by or primarily involving civil servants, the SSC SMA Director shall be the AO and, nominally, SSC SMA personnel shall investigate these cases. The Center Mishap Manager will make the final approval of the investigation and corrective actions in NMIS by closing the case. In the event that a formal IA appointment is made, the procedures in 4.3 will be followed.

c. The AO and resulting IA for Program/Project mishaps shall be as specified in the Program/Project mishap plan. The Center Mishap Manager will make the final approval of the investigation and corrective actions in NMIS by closing the case.

d. The AO for Center-declared high-visibility mishaps and close calls shall be the SMA Director or Center Director, who shall appoint an IA composed of civil servants. When a mishap or close call is declared high-visibility, the OSMA Program representative shall be notified within 24 hours of declaration. Nominally a single independent investigator (II) or three-person mishap investigation team (MIT) will be appointed.

4.2.2 The Center Director or SMA Director may reclaim AO responsibilities for any Type C or D mishap or close call occurring at Stennis Space Center and choose to formally appoint an IA.

4.2.3 All members of the IA, regardless of mishap type and whether appointed or not, shall complete the following training once except as indicated in italics below:

a. Overview of Mishap Investigations (SATERN Electronic Course - SMA-002-07)

b. Mishap Investigation Roles and Responsibilities (SATERN Electronic Course - SMA-002-08)

c. Completing the Investigation and Mishap Report (SATERN Electronic Course - SMA-002-09)

d. Introduction to Root Cause Analysis (SATERN Electronic Course - SMA-002-10) (*every two years*)

e. Introduction to Human Factors In Mishap and Close Call Investigation (SMA-001-07) (*once for the human factors member of the IA)*

f. Interim Response Team Training (SATERN Electronic Course - SMA-002-11)

g. NASA Root Cause Analysis (SATERN Classroom Instruction - SMA-SAFE-OSMA-4003 or SATERN Electronic equivalent SMA-002-14) (*every five years for one member of the IA*)

h. Human Factors in Mishap Investigation (SATERN Classroom Instruction - SMA-SAFE-OSMA-4004 or SATERN Electronic equivalent SMA-002-15) (*every five years for the human factors member of the IA*)

4.2.4 In all investigations the IA shall determine what happened, when it happened, and why it happened with the goal of preventing incident recurrence. A structured analysis technique such as five whys or fault tree analysis shall be used to the level deemed necessary according to the severity of the mishap or close call. In order to perform this analysis the IA shall use the data collected by the IRT. In addition, the IA shall collect and evaluate additional data relevant to the mishap as necessary. These data and records are not limited to those generated concurrently or as a result of the mishap, but also include relevant information such as historical, environmental, operational, and other information. For civil servant investigations of all types, this also includes collecting witness statements from all of the witnesses of the incident using the form in Appendix I. The IA shall also calculate the direct cost using the worksheet in Appendix B. Tools have been provided to ensure that all investigation requirements are fulfilled. NMIS users will use the checklist in Appendix C to ensure the case is complete in NMIS before submitting for closure.

4.2.5 After the investigation is conducted per 4.2.3, the IA shall make recommendations to prevent reoccurrence that are clear, verifiable, achievable, measurable, and traceable to at least one significant finding. The AO (appointed investigations) or Center Mishap Manager (default IAs) shall confirm that the recommendations are clear, verifiable, achievable, measurable, and traceable to at least one significant finding. The responsible organizations shall then follow the post investigation activities detailed in 4.8.

4.3 Additional Information and Responsibilities of Formally Appointed Investigating Authorities

4.3.1 An II, or MIT can be appointed by the Center Director or SSC SMA Director to investigate Type C and D mishaps or close calls as they deem fit. This process includes but is not limited to Center-declared high-visibility mishaps and close calls. MIBs are reserved for Type A and B mishaps and are further detailed in section 4.4. Regardless of the type of incident and IA appointed, a letter of appointment will be issued by the AO. All formally appointed IA from the Center regardless of case type, shall be identified within two working days and appointed by letter within seven working days. Appendix G provides guidelines for issuing a Letter of Appointment for an IA by the AO. Unless specifically required by unique circumstances, standard security background checks and security clearances are adequate for IA members. Appointed IA for Type C and D mishaps and close calls, including Center-declared high-visibility mishap and close calls, shall follow investigation procedures as described by using the checklist in Appendix J.

4.3.2 After the investigation is conducted per 4.2.3 and recommendations are made per 4.2.5 recommendations may need to be communicated outside SSC for corrective action. The AO shall be responsible for communicating the recommendations to the responsible NASA organization or external body so that they can implement the corrective action.

4.3.3 Appointed IA shall produce a mishap investigation report with findings and recommendations and conduct an outbrief presentation. The investigation report shall be completed and distributed to the endorsers at least one week before the outbrief presentation. The AO is responsible for the endorsement process of the mishap investigation report. At minimum the AO shall have the SMA Director, Chief Engineer, Chief Safety Officer, Office of Chief Counsel and the Office of Communications review and endorse the report. The review shall conclude in a report that is publicly releasable, if at all possible. The AO may include additional endorsers in the review and endorsement process. The AO shall detail additional endorsement instructions in writing to the endorsing officials. The endorsing officials shall follow the instructions for endorsing and also attend the investigation outbrief presentation. The endorsing officials shall be prepared to endorse the investigation at or before the presentation. At the conclusion of the investigation, the AO shall accept the report in writing, which will release the IA. The AO will also indicate the organization that will develop the corrective action plan (CAP).

4.3.4 The AO shall concur with the CAP. The responsible organization shall report back to the AO when the corrective actions are complete and present objective evidence for each corrective action. If the CAP execution is considered acceptable, the AO shall issue a closure statement in writing. For Center-declared high visibility mishaps or close calls, the AO shall notify OSMA that the investigation and corrective actions are complete. The mishap manager shall review the case for completeness and close the case in NMIS.

4.4 IA Additional Requirements for Type A and B Mishaps and Agency-Declared High Visibility Mishaps and Close Calls

4.4.1 There are additional requirements for AOs and IAs of Type A and B mishaps and Agency-declared high-visibility mishaps and close calls. This section only applies to these more serious mishaps and close calls.

4.4.2 In the case of Type A and B mishaps and Agency-declared high-visibility mishaps and close calls, the provisional list of IA appointees shall be provided to the OSMA Mishap Investigation Program Executive within 48 hours of concurrence. Concurrence from the Office of Chief Health and Medical Officer (OCHMO) shall also be required if the undesired outcome was an injury or illness, an injury or illness was causal to the undesired outcome, or amelioration impacted the severity of the undesired outcome where injury or illness is involved. The AO shall appoint the IA within seven work days with concurrence of NASA Chief/OSMA, Office of the

Chief Engineer (OCE), OCHMO, and Aircraft Management Division (AMD) when warranted by the undesired outcome.

4.4.3 Type A and B mishaps and Agency-declared high-visibility mishaps and close-calls shall have an MIB or MIT with a minimum of 5 and 3 members, respectively, and shall have an odd number of members. Board members will be appointed from other Centers or Government agencies when appropriate, however, the members shall be federal personnel. A chairperson shall be appointed. An ex-officio is also required for an MIB. The ex-officio shall be a non-voting participant in all investigation deliberations. He/She will participate in all investigation proceedings as he/she deems appropriate, to ensure the investigation conforms to NASA policy and NPR 8621.1. The ex-officio shall ensure the investigation process is impartial, independent, and non-punitive. Advisors may also be appointed and shall also be federal personnel. A legal and public affairs advisor is a requirement for Type A and B Agency-declared high-visibility mishaps and close calls. Humans Factors and safety professional members of the MIB are also required for Type A and B mishaps. Consultants are optional resources for the MIB and are not required to be federal personnel.

In addition, to satisfy the appointment letter the IA shall have primacy over other agency collateral investigations with the exception of OIG criminal investigations. The IA has the responsibility to recommend membership changes to the AO. The IA may not participate in more than one type of investigation (NASA, collateral, contractor) for the same mishap/close call at the same time. The IA for Type A or B mishaps or Agency-declared high-visibility close calls shall determine the sequence of events and conditions leading up to and including the mishap or close call and document them in a timeline.

4.4.4 The Chairperson shall be assigned independent responsibility for IA operation and report only to the AO per NPR 8621.1. The Chairperson shall also be independent of the area where the mishap occurred. The chairperson has the additional duties and responsibilities to:

a. Manage and coordinate all aspects of the mishap investigation including, but not limited to assigning group leaders, coordinating document and information gathering activities, interviewing witnesses, reconstructing the mishap or close call, identifying facts, identifying causal (proximate, intermediate, and root) and contributing factors, generating recommendations, and completing the mishap investigation report

b. Use the authority to impound data, records, equipment, and facilities and collect or salvage data and debris

c. Work with the procurement and legal advisors to obtain and impound data for mishaps at contractor or subcontractor sites

d. Define the roles and areas of investigative responsibility for each group or subgroup on the IA

e. Coordinate with the IA legal advisor, HQ, public affairs advisor, and other advisors throughout the investigation

f. Report only to the AO or designee during the investigation

g. Refer allegations and evidence of criminal activity, with IA legal advisor assistance, identified in the course of an investigation to the OIG and General/Chief Counsel

h. Protect privileged witness statements to the extent provided by law and allow all requests for privileged to be processed information through NASA HQ

i. Ensure that a publicly releasable investigation status report is developed every 30 workdays from the time the appointment letter is signed until the mishap investigation report is signed

j. Use the status report template obtained from the NSC Mishap Investigation Support Office (MISO) regional support specialist and address facts on the investigation status to date

k. Ensure the report is signed with an approved status and distributed to the AO, responsible Center Director or Program Manager, Cognizant Safety Office, OSMA, and Agency SMA personnel through the regional mishap support specialist approved distribution list

l. Ensure the status reports are posted to NMIS.

m. Release the mishap site, impounded data, records, equipment, and/or facilities with concurrence of legal advisor when no longer needed.

n. Ensure original data and records is not released without having a copy of the same integrity as the original and logging the transfer

o. Ensure the completed and signed mishap investigation report is submitted to the AO within the specified time or submit a request for additional time to complete the investigation or the mishap investigation report

4.4.5 The Legal Advisor has the additional duties to:

a. Develop nondisclosure agreements (NDAs) for IA contractor administrative support personnel and consultants

b. Develop NDAs when the IA uses a contractor to analyze interview data or participate in interviews

c. Provide legal advice and counsel as requested by the chairperson

d. Attend interviews whenever a lawyer accompanies the interviewee during the interview process

4.4.6 All NASA advisors shall sign the mishap investigation report for Type A and Type B mishaps and Agency-declared high-visibility mishaps and close calls stating that each has reviewed the report, and it meets NASA policies and procedures in the advisor's functional area. Specific advisors have additional signature responsibilities as follows.

a. The export control advisor's signature shall indicate that any International Traffic in Arms Regulations (ITAR) and/or Export Authority Regulations (EAR) information has been identified and marked as non-releasable to the public.

b. The legal and public affairs advisors' signatures shall indicate that any privileged or proprietary information, or material subject to the Privacy Act has been identified and marked as non-releasable to the public (e.g., NASA Sensitive But Unclassified (SBU)); and releasable volumes and appendices are marked publically releasable. The public affairs advisor is not responsible for identifying such information because this knowledge is outside the scope of the public affairs advisor's functional area; however, the public affairs advisor shall be responsible for verifying the appropriate reviews have been conducted by the appropriate experts before signing the report.

4.4.7 OSMA MISO mishap investigation specialists are accessible to the IA to support the investigation for Type A and B mishaps and Agency-declared high-visibility mishaps and close calls. The MISO and the ex-officio may be the same person. The ex-officio shall serve as the authorized representative of the Chief/OSMA and sign the completed mishap investigation report for Type A and Type B mishaps and Agency-declared high-visibility mishaps and close calls attesting to the following:

a. The investigation was conducted in conformance with NASA policy and NPR 8621.1.

b. The investigation process was impartial, independent, and non-punitive.

c. The mishap investigation report contains all the required elements.

d. The mishap investigation report accurately identifies the proximate causes, root causes, and contributing factors. He or she should verify that a process was followed for root cause analysis and the causes were identified and labeled correctly.

e. Adequate facts have been gathered and analyzed to substantiate the findings.

f. Recommendations reasonably address the causes and findings.

g. Each recommendation is associated with or traceable to at least one significant finding.

If the conditions above have not been met, the ex-officio shall describe the mishap investigation report's deficiencies in writing and sign and attach this description to the mishap investigation report in lieu of signing the report.

4.4.8 In lieu of appointing an IA, the AO can determine if NASA will accept the investigation and subsequent mishap investigation report of another competent authority having jurisdiction. When the NASA AO accepts an independent investigation conducted by other authorities or contractors citing factual events and conditions for findings from which proximate causes, root causes, and contributing factors may be deduced, the AO is not required to conduct a separate NASA investigation.

4.4.9 Non-federal employees may serve as consultants to the MIB or MIT or II. However, they do have additional responsibilities and restrictions as follows:

a. The consultants' academic and technical experience should match or exceed the technical and management complexity of systems related to the mishap.

b. IA consultants may be contracted or hired to provide technical expertise to the IA, perform analysis and assist in formulating findings, as requested.

c. Consultants shall not participate in deliberations or vote on findings.

d. The names of the consultants may be listed in the mishap investigation report; however, the consultants shall not sign the mishap report.

e. Consultants shall not read, listen, or participate in witness interviews unless they are tasked to record or analyze interviews in which case the IA may procure the services of contractors specializing in witness interview techniques or having other technical expertise if the following are true:

   (1) The contractor is not affiliated with the mishap, the contractors, or responsible organizations involved in the mishap.
   (2) The contractor is specifically tasked by contract to support the interview process or analyze interviews.
   (3) The contractor has signed the NDA prior to participation or support.
   (4) NASA does not have Federal employees readily available to perform the task.

4.4.10 Non-Federal employee administrative support shall sign an NDA before given access to mishap data or ITAR, EAR, proprietary, or privileged information.

4.4.11 Mishap investigation reports of Type A and B mishaps and Agency-declared high-visibility mishaps shall include the following information/sections:

a. The mishap classification level and NMIS event number, the incident date, and the report date on the mishap investigation report title page and in the report executive summary

b. A description of the type of property damage or mission failure and the severity of injuries or illnesses

c. The actual direct cost of the mishap or an estimate if the actual direct cost is not available

d. Timeline of the events leading up to, including and after the desired event to the extent necessary to determine causes.

e. Description of all structured analysis techniques used and how they contributed to determine the findings

f. Event and Causal Factor Tree or similar graphical representation of the mishap

g. Description explaining why the mishap or close call occurred including all findings such as proximate causes, root causes, contributing factors, failed barriers, observations, and the evidence upon which the findings are based

h. The following products shall be in the following specific order:

(1) Section 1: Signature pages, list of consultants, and OSHA form 301 question 14 through 17 information (for reportable occupational injury or illness)
(2) The executive summary that includes a publicly-releasable description of the activity leading to the mishap and the findings and recommendations in the report
(3) Section 2: Narrative description and facts (what, when, where, how)
(4) Section 3: Type of data gathered and data analysis
(5) Section 4: Findings
(6) Section 5: Recommendations
(7) Section 6: Minority Report, if applicable

4.4.12 The AO shall verify it fulfills the appointment letter, and then inform the IA in writing that its responsibilities they have been fulfilled.

4.5 Aircraft Mishaps and Close Calls

The SSC IRT shall be deployed for aircraft mishaps and close calls in accordance with SPLN-8621-0003 unless an alternate MPCP is documented in advance. Immediately following the mishap or close call the appropriate notifications shall be made as follows:

a. All aircraft mishaps and close calls aboard or above SSC related to SSC-sponsored or SSC-owned aircraft operations shall be immediately reported to the SSC SMA Director and, if applicable, the cognizant Chief of Flight Operations for the mission flown.

   (1) For military aircraft operations, this only applies if the mishap or close call occurs during the use of SSC airspace defined by R-4403C/E/F, or if the mishap or close call affects SSC personnel, tenants, or property. Mishaps or close calls having no affect upon NASA personnel, tenants, or property shall not be a part of the SSC mishap program and are not considered NASA mishaps.
   (2) This procedure applies for both manned and unmanned aircraft.
   (3) Mishaps or close calls involving NASA aircraft (as defined in NPR 7900.3) shall be reported to the responsible Center's Chief of Flight Operations.

NTSB notification definitions are found in 49 CFR 830.2

b. Aircraft mishaps or close calls triggering NTSB notification shall be immediately reported to the NTSB by the SSC SMA Director.
   (1) NTSB Response Operations Center can be reached at 844-373-9922 or 202-314-6290.
   (2) A complete list of triggers for NTSB notification may be found in 49 CFR Part 830.5, but specific triggers potentially applicable at SSC are the following:
      (a) Flight control system malfunction or failure
      (b) Aircraft collision in flight
      (c) Damage to property, other than the aircraft, estimated to exceed $25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less
   (3) After notifying NTSB, the SMA Director shall notify NASA OSMA, the NASA Office of Strategic Infrastructure, and AMD, of both the mishap or close call and the NTSB notification.
   (4) Within 10 workdays of an aircraft mishap or close call meeting NTSB reporting requirements, the SSC SMA Director shall submit an NTSB Form 6120 to the NTSB Eastern Regional Office, 45065 Riverside Parkway, Ashburn, Virginia 20147, 571-223-3930.

The IA shall be appointed by the Center Director using the chart in Appendix K.

4.7 Department of Defense Participation in Investigations

The Board Chairperson will use Department of Defense (DoD) representatives as participants in investigations of program mishaps or close calls where there are DoD responsibilities or where the DoD is participating in that part of the test or operation.

4.8 Post Investigation Activities

4.8.1 Corrective Actions

At the conclusion of the investigation, the steps to develop and implement corrective actions and close the mishap depends on the type of mishap. Corrective actions for Type C and D mishaps and close calls shall be entered in NMIS. When the corrective actions are complete, objective evidence shall be entered in NMIS and the case shall be submitted for closure. The case will be evaluated for closure by the SSC Mishap Manager using the checklist in Appendix C. Once the Mishap Manager is satisfied that the investigation, completed corrective actions, and objective evidence are fully documented in NMIS, the case will be closed indicating approval.

Type A and B mishaps and high-visibility mishaps and close calls, and investigations with appointed IA shall have the CAP submitted by the responsible organization for approval by the AO. Once the CAP is approved, the responsible organization will execute the CAP and submit evidence of completion to the AO. Any additional steps required by the AO shall be documented in a direction letter. At the completion and acceptance of the corrective actions the AO shall provide a closure statement to close the case. All documentation related to the CAP, completed actions and closure statement shall be uploaded to NMIS. The case can then be closed in NMIS by the SSC Mishap Manager.

If the incident involved the potential for or actual catastrophic release of highly hazardous chemicals in the workplace, the results of the investigation shall be reviewed with the affected civil service and contractor employees.

4.8.2 Mishap Warning-Action-Responses (MWARs)

The IA shall provide a Mishap Warning-Action-Response (MWAR) to OSMA using the template obtained from OSMA at any time during the investigation when the IA identifies a safety finding requiring immediate action that could impact one or more Centers or when NASA-wide implications are present. The IA shall obtain MWAR approval from the Office of Chief Counsel and the PAO in the Center Office of Communications. OSMA will distribute the MWAR electronically to Agency SMA personnel.

4.8.3 Lessons Learned

All Type A and B mishaps as well as Agency-declared high-visibility mishaps and close calls shall have lessons learned developed and submitted to the NASA Engineering Network (NEN) Lessons Learned Information Systems (LLIS). At a minimum, all Type C and D mishaps and close calls with an IA appointed by letter shall be explored for lessons learned. All lessons learned developed from Type C and D mishaps and close calls will be added to the Center's lessons learned database and considered for submission to the NEN LLIS. These requirements do not exclude any mishap or close call from being evaluated for lessons learned and submitted to the SSC Lessons Learned POC for consideration.

5.0 RELEASE OF INFORMATION

5.1 Initial Release of Information Following a Mishap

It is NASA policy to make prompt release to the news media and the public of factual information concerning NASA mishaps resulting in injury to, death of, person(s), or extensive damage to, or destruction of, Government-owned or contractor-owned property on a NASA Center. When a mishap fits this criteria, the PAO will release information immediately, no later than one (1) hour after the occurrence of the incident. An initial preliminary report should specify time, location, and a general description of the mishap. Within 48 hours of a mishap or close call, NASA shall provide all NASA employees and contractors access to information considered releasable to the public including date, location, and brief description of the event. Witness statements will not be reported and are not releasable to the extent provided by law.

The PAO in the Center Office of Communications shall coordinate all activities for the release of information through the Center Director's Office and the Office of Chief Counsel. If the incident involves facilities, the PAO will initiate and take the lead for release of information and responding to media inquiries, including serving as NASA spokesperson for SSC. Impoundment does not preclude release of information.

Beyond the public release of information, only authorized persons, in accordance with the Freedom of Information Act, may give out information concerning a mishap. Only the Center Director and SSC SMA Director or their designees may give out information after coordination with the Center Office of Chief Counsel and Center Office of Communications in accordance with the Freedom of Information Act (FOIA). Members of the IA shall be consulted, as appropriate, if information is released while the investigation is active. If there is an MIB, the Center Office of Communications or Center News Chief will serve as an advisor to the MIB unless otherwise directed by the Administrator. The release of any information in accordance with FOIA will be coordinated with the FOIA Officer.

5.2 Release of the Mishap Investigation Report and Supporting Materials

Per NPR 8621.1, a mishap report shall not be released for any reason until it has been endorsed by the endorsing official and accepted by the AO. During the review process, the AO shall ensure that the report is reviewed and concurred by Office of Chief Counsel and the PAO. The Office of Chief Counsel and the PAO shall make any objections to public release known during the review and those objections shall be resolved before public release. In accordance with NPR 8621.1, for mishaps of certain public interest whose reports are not suitable for public release because the information they contain is proprietary or subject to ITAR or EAR, the IA public affairs advisor and the IA will produce a separate, publicly releasable summary of the findings and recommendations in the report. Release of supporting materials, such as CAPs and implementation evidence, shall follow the same FOIA process as the mishap report.

6.0 CASUALITY NOTIFICATION AND MEDICAL JURISDICTION

6.1 Reporting NASA Employee Casualties

When a NASA employee is seriously injured or killed within the confines of a NASA Center, the announcement will be made by the PAO no later than 1 hour after the mishap. The PAO will report what is known at the time, that fatalities or injuries have occurred, and when additional information is expected to be available. In the case of fatalities or serious injuries, release of victim's names shall be withheld until official notification of next of kin per SPR 3790.1, *SSC Notification and Assistance to Next of Kin*. The Center Director or appropriate HQ Official-in-Charge, according to NPR 8621.1, will ensure notification of the family has been made prior to any information being released. Only the Johnson Space Center Director is authorized to conduct astronaut next of kin notification.

The Center Director, Medical Officer, SSC SMA Director, and Chief Counsel will consult the local coroner to determine medical jurisdiction and arrangements for forensic analysis for NASA employees. The NASA Office of the General Counsel will be consulted as needed. They will consider that certain religious denominations forbid autopsies.

6.2 Contractor Personnel Casualties

NASA does not assume responsibility for release of information concerning serious mishaps involving contractor employees except as follows:

a. When a mishap occurs on a NASA Center, it is the responsibility of the Center Director to announce as soon as possible that a mishap has occurred, as well as the number of known dead and/or injured. NASA, however, will not announce the names of contractor personnel involved.

b. When a mishap occurs on a NASA Center involving visitors, it is the responsibility of the Center Director to announce as soon as possible that a mishap has occurred, as well as the number of known dead and/or injured. The release of civilians' names will be made in accordance with the policy stated above for reporting NASA Employee Casualties.

7.0 RECORDS AND FORMS OR QUALITY RECORDS AND FORMS

All records and forms are assumed to be the latest version unless otherwise indicated. Quality Records are identified in the NASA/SSC Master Records Index.

8.0 ACRONYMS

AA	Associate Administrator
AO	Appointing Official
AMD	Aircraft Management Division
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
COR	Contracting Officers Representative
DoD	Department of Defense
EAR	Export Authority Regulations
EOC	Emergency Operations Center
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
HQ	NASA Headquarters
IA	Investigating Authority
IC	Incident Commander
II	Independent Investigator
IRT	Interim Response Team
ITAR	International Traffic in Arms Regulations
LLIS	Lessons Learned Information System
MAF	Michoud Assembly Facility
MDAA	Mission Directorate Associate Administrator
MIB	Mishap Investigation Board
MISO	NSC Mishap Investigation Support Office
MIT	Mishap Investigation Team
MPCP	Mishap Preparedness and Contingency Plan
MSFC	Marshall Space Flight Center
MWAR	Mishap Warning-Action-Response
NASA	National Aeronautics and Space Administration
NDA	Nondisclosure Agreement
NEN	NASA Engineering Network
NMIS	NASA Mishap Information System
NPR	NASA Procedural Requirement
NSC	NASA Safety Center
NTSB	National Transportation Safety Board
OCE	Office of the Chief Engineer
OCHMO	Office of the Chief Health and Medical Officer
OCOM	NASA Headquarters Office of Communications
OIG	Office of Inspector General
OIIR	Office of International and Interagency Relations
OSHA	Occupational Safety and Health Administration
OSMA	Office of Safety and Mission Assurance (Headquarters)

PAO	Center Public Affairs Officer
PII	Personally Identifiable Information
PPE	Personal Protective Equipment
POC	Point of Contact
RO	Responsible Organization
SACOM	Synergy Achieving Consolidated Operations and Maintenance
SATERN	System for Administration, Training, and Educational Resources for NASA
SBU	Sensitive But Unclassified
SMA	Safety and Mission Assurance
SPLN	Stennis Plan
SPR	Stennis Procedural Requirement
SSC	Stennis Space Center

APPENDICES

APPENDIX A. Test Induced Damages

It is acknowledged that test-incurred damage often occurs at NASA; the knowledge gained is used to improve designs.

Test damage is a reportable NASA mishap if:

a. The failure or damage was associated with procedural errors or with a non-compliance to design or construction requirements

b. Test-incurred damage caused harm to personnel or to uninvolved equipment, facilities, or property.

For the purposes of mishap determination, development tests are not missions nor are development test objectives mission objectives unless specifically defined as such in the program, project, or mission pre-mishap plan.

Ruling out test-induced damages as a NASA mishap requires pre-planning to include:

a. A signed document describing the risk of potential test-induced damage outcomes includes the test team's best understanding of the uncertainties in environments, test limits, or system performance.

b. Examples of test-induced damage incidents that may be accepted prior to testing in a test plan or related document include the following:
   (1) Structural damage resulting from planned structural tests-to-yield when performance between yield and ultimate failure is uncertain.
   (2) Unplanned but acceptable limited erosion of a flame trench during launch or engine firing.
   (3) Thermal damage to brakes and tires during a maximum braking test.
   (4) Thermal, blast, or erosion damage to cables and other normally exposed equipment on a launch pad or in an explosive chamber.
   (5) Excessive splashdown structural damage to a recoverable booster when new parachute performance is uncertain.
   (6) Loss of test hardware as a result of known, accepted deficiencies in the test or test support system (e.g., planned use of off-the-shelf, low-reliability sounding rockets for low-cost suborbital tests).
   (7) Crash damage to a model airplane as a result of known and accepted controller handling quality limitations.
   (8) Damage sustained to unmanned aircraft system (UAS) when used for risk reduction flights to test systems of manned aircraft.

(9) The crash of a UAS when the test is to evaluate the aircraft itself or the systems on board.

(10) Damage resulting from one or more of the following:

a) Acknowledged limitations in pre-test analysis or models or uncertainties in analysis, model, or environmental predictions.

b) Planned test operations in known and approved hazardous environmental conditions.

c) Purposefully testing in an organizational environment where NASA, by formal choice, does not control hazards (i.e., Space Act or international agreements where NASA cedes design, operational risk management, or both to the partner).

The following examples of test-related damage are not normally "accepted risks," and, therefore, would be candidates for mishap categorization:

a. Damage as a result of human error in test setup or conduct when relevant human performance is not part of the test objectives.

b. Damage as a result of standard test planning or test design not done in accordance with Agency, Center, or Program requirements.

c. Damage to the test article resulting from test facility malfunction during a test.

d. Damage as a result of test facility software malfunction when relevant software performance is not part of the test objectives.

APPENDIX B. Direct Cost Calculation

Requirement: NPR 8621.1 - 2.4.3 The responsible organization, with review and concurrence of the organizational safety office (*SMA Directorate or contractor safety as applicable*), shall calculate the direct cost of a mishap or close call.

		Costs of All of the Following:	Cost
1		Actual costs of damaged or destroyed property (parts as if purchased new and labor)	
2		Mission failure	
3		Lost commodity (e.g., lost fluid from a ruptured pressure vessel)	
4		Environmental decontamination	
5		Property cleanup and restoration	
6		Other (describe)	
7		Other (describe)	
		Total	

These calculations were prepared by _____ for mishap number_____

Sign_____ Date Submitted:_____

*Note: Indirect costs that would **NOT** be part of a direct cost calculation include:*

1. Cost of expended emergency response or supplies
2. Training and compensating replacement personnel
3. Workers' compensation costs
4. Medical treatment costs
5. Lost productivity including lost use of damaged equipment
6. Depreciation of damaged equipment
7. Cost of the safety mishap investigation to include analysis, inspection, and travel
8. Schedule delays
9. Legal liability costs and fines
10. Insurance costs
11. Corrective or preventive action costs
12. Costs associated with incident reporting and recordkeeping

APPENDIX C. NMIS Mishap and Close Call Closure Checklist

This checklist is based on the requirements in NPR 8621.1 and applies to Type C and D mishaps and close calls at SSC. In the case of any conflict, the NPR takes precedence. All incidents shall be documented in the NMIS. Unless otherwise indicated in an appointment letter, the NMIS record shall serve as the mishap report. Filling out this checklist is not mandatory but will be used by the mishap management team to assess incidents for closure readiness. It is strongly encouraged to be used by submitters to assess the documentation completeness before submitting for closure.

NMIS Section - Initial Information	Completed	Notes
Brief Description does not include names of individuals and is brief (1-2 sentences). **NOTE:** This description goes out as written, without SSC review, in a daily email across the entire AGENCY. Please leave out individual and company names and any other details that should not be widely distributed.		
What Happened includes more details. Please include all information available but leave out names. If possible, include a job description for involved parties like office worker, clean room technician, welder, machinist, engineer, accountant, etc.		
The event classification matches the final property damage and/or injury severity.		
Either a specific contractor or directorate has been identified as the owner.		
NMIS Section - Type Information		
Is the Event High Visibility has been checked ***no*** unless otherwise instructed by the SMA Director or Center Director.		
An *Event Type* and *Subtype* have been selected.		
NMIS Section - Location		
The location information is complete including the *Specific Location of Event* section		
NMIS Section – Reporting Information		
Automatically generated		
NMIS Section – Legacy Data		
N/A in most cases		
NMIS Section - Injury/Illness		
All the details are complete and injury description matches the OSHA classification which matches the NASA mishap classification in the *Initial Information* section.		

NMIS Section – Property Damage		
Fill out this section if there is actual property damage or a potential for property damage. The actual damage cost must be completed before closure. The cost can be $0.00. The direct cost worksheet shall be used for calculations and attached in the *Attachments* section.		
NMIS Section - Findings/Corrective Actions		
There is at least one finding.		
The findings tell WHY the incident occurred rather than what occurred.		
For every finding there is a corrective action		
For every corrective action there is objective evidence that the action was completed. Objective evidence can be photos [before and after repair, physical aids purchased or made, Personal Protective Equipment (PPE) purchased], training content and rosters, updated documents, documents created, tools created (checklists, flow diagrams, etc.), task orders, receipts, etc. – these items should to referenced to in the *Findings/Corrective Actions* section and uploaded in the *Attachments* section.		
NMIS Section – Investigation Tracking		
Only applicable for A, B and high visibility incidents.		
NMIS Section - Attachments		
Add all referenced attachments including reports, presentations, emails, photographs, rosters, letters, documents, direct cost calculations, etc. Attachments can indicate status, serve as a record or be objective evidence. Make sure all files that have PII, proprietary information or other sensitive information are marked *Restricted* when uploaded.		
NMIS Section – Closure Checklist		
Review to ensure that the case can be considered for closure. Even if there are no software errors, the case may be missing information that prevents it from being closed.		
Submit for closure after review of this list for completeness.		

APPENDIX D. Impound Inventory and Release Form

IRT Impound Inventory and Release Form						
Item	***ID***	***Item Type***	***Impound Date***	***Impound Location***	***Release Date***	***Released to (name, role)***
(EXAMPLE) As-Run Test Countdown Procedure	*DOP-O-10-0068*	*Document*	*25-Jul-17*	*B11, R303G*	*28-Jul-17*	*Mike Johnson, Investigative Authority*

APPENDIX E. Interim Response Team Checklist

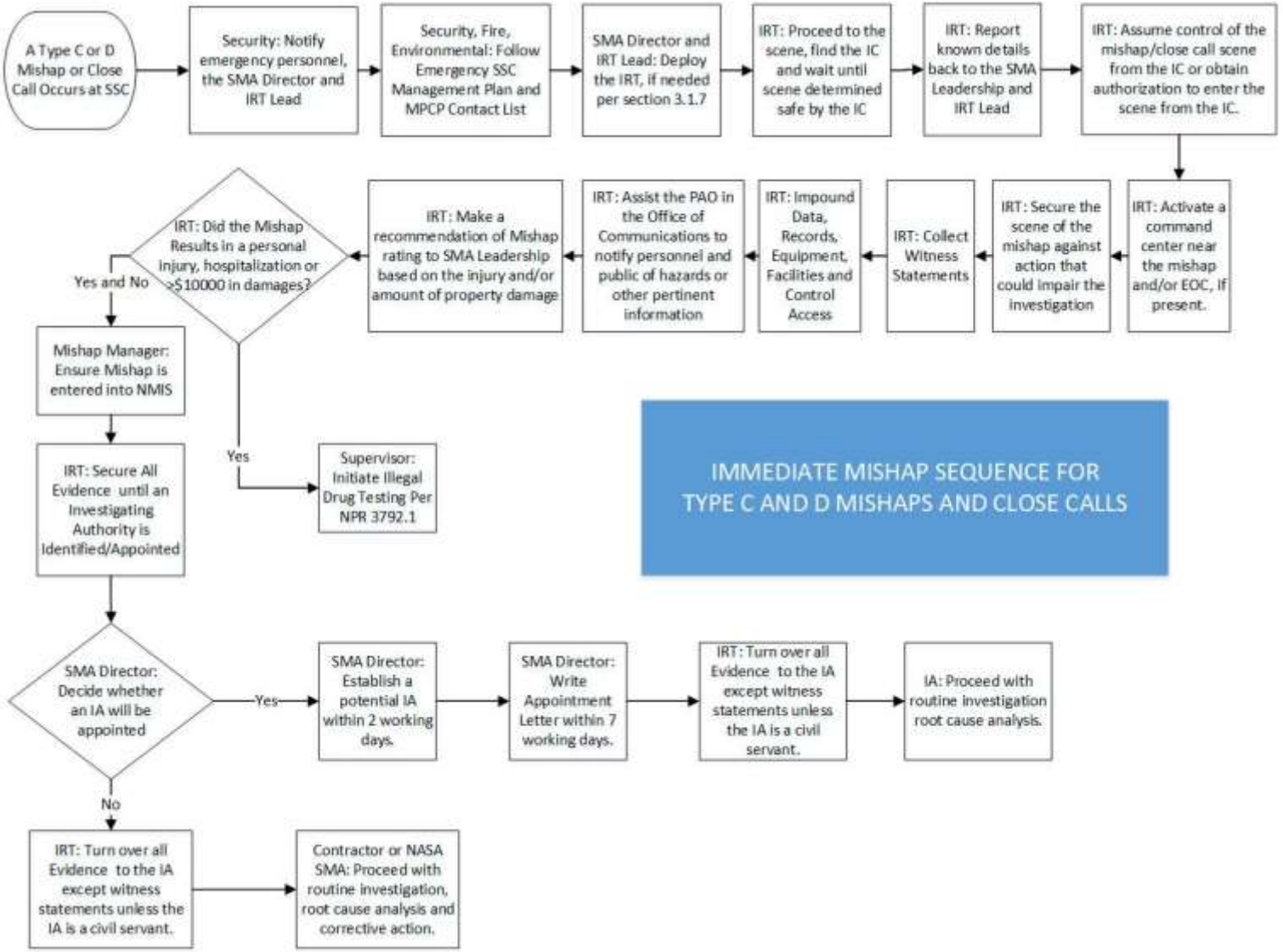
This checklist is based on the requirements in NPR 8621.1 and applies solely to the SSC Interim Response Team as indicated below. In the case of any conflict the NPR takes precedence. By requirement, all the members of the IRT are civil servants.

	TRAINING FOR ALL IRT MEMBERS	Completed	Notes
1	Have taken SATERN training Overview of Mishap Investigations (SMA-002-07) within the last 3 years		
2	Have taken SATERN training Mishap Investigation Roles and Responsibilities (SMA-002-08) within the last 3 years		
3	Have taken SATERN training Completing the Investigation and Mishap Report (SMA-002-09) within the last 3 years		
4	Have taken SATERN training Introduction to Root Cause Analysis (SMA-002-10) within the last ***two*** years		
5	Have taken SATERN training NASA Interim Response Team Training (SMA-002-11) within the last 3 years		
6	Have been trained in SSC procedures by the SSC IRT trainer (current or previous IRT lead)		
	REVIEW PERIODICALLY AND BEFORE PROCEEDING TO THE SCENE		
7	The contents of the IRT go-kit for completeness focusing on consumables and items that expire (e.g., witness statements, batteries, SD cards, etc.). Use the go-kit checklist for assistance provided by the IRT lead.		
	OBTAIN BEFORE PROCEEDING TO THE SCENE		
8	Direction to proceed from the IRT Lead, Deputy Lead or SMA Director.		
9	Information on possible hazards and precise location. Add additional PPE to the go-kit and consult a center map if needed.		
	UPON ARRIVAL AT THE SCENE		
10	Stand by until scene is determined safe by the Incident Commander and released to the Response IRT.		

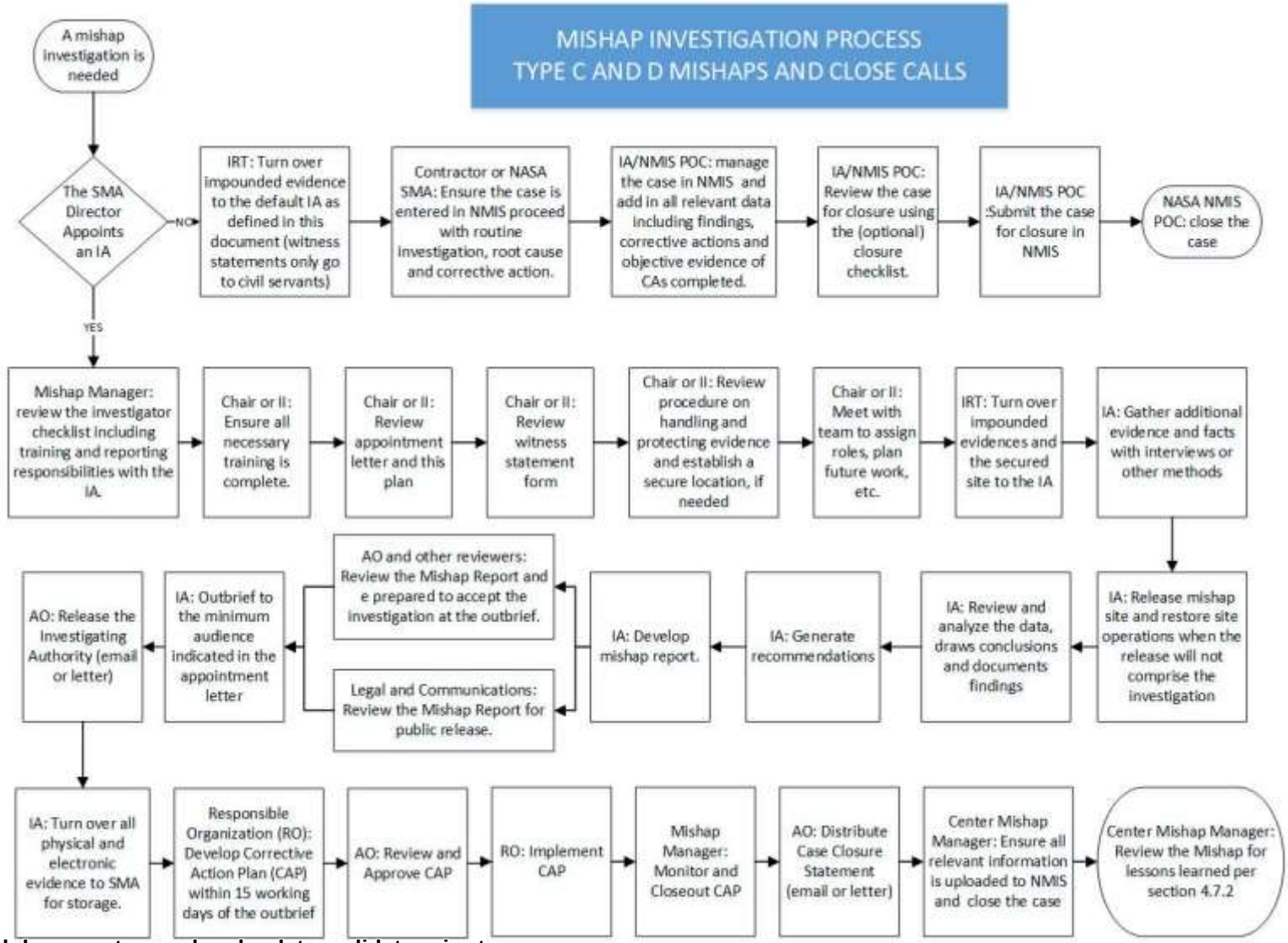
11	While standing by the scene, report the known details of the mishap to the SMA Director, SMA leadership, IRT Lead and Mishap Manager.		
12	Assume control of the mishap/close call scene from the IC or obtain authorization to enter the scene from the IC.		
13	Activate an incident command center near the mishap and/or the EOC when appropriate.		
14	Secure the scene of the mishap against action that could impair the investigation, disturb the area, or destroy configuration integrity. Do not allow any disruption of mishap area unless necessary for safeguarding.		
15	Obtain written statements from all witnesses. Use the witness form in Appendix I for all witnesses.		
16	Activate and /or verify activated all applicable recording devices such as video recording cameras, data recording systems, etc. to capture post-event data.		
17	Establish and maintain a time-based action and activity list to record events as they happened during and after the safeguarding process.		
18	Impound any data, procedures, records, and/or equipment.		
19	Assist the Center Office of Communications with any information needed for public release as requested.		
20	Report back to the SMA Director, SMA leadership, IRT Lead and Mishap Manager the fullest description possible of incident, a proposed mishap classification based on the injuries and/or estimate property damage, and the current status of the scene.		
21	After obtaining and impounding all evidence, secure the scene pending the identification of the IA or indication that the incident is not a NASA mishap or close call.		
22	If there is information that the incident is not a NASA mishap or close call, review the data with the IRT Lead and release the scene to the responsible organization if the IRT Lead concurs.		

23	If the incident is a NASA mishap or close call, release the scene and turn over all evidence with the exception of witness statements upon identification of the IA.		
24	Turn over witness statements to the IA if they are composed of civil servants. If the IA are not composed of civil servants, turn over the witness statements to the SSC Mishap Manager.		
25	File a record of the mishap response in the SMA electronic files.		

APPENDIX F. Type C and D Mishap and Close Call Immediate Response



APPENDIX G. Type C and D Mishap and Close Call Investigation



APPENDIX H. Guidelines for Letter of Appointment for Investigation Authority by the Appointing Official

Include in the Appointment Letter:

a. Introduction: Briefly explain mishap being investigated, the scope of the investigation and the undesired outcome.
b. The MIB, MIT or II members and positions, i.e., chair, ex-officio, advisors, consultants.
c. The Authority and Responsibilities of the MIB, MIT or II.
d. The expected duration and milestones of investigation.
e. A statement of relief of the IA from collateral duties
f. A statement of expected cooperation of Center and Program/Project personnel regarding IA requests for information relevant to the investigation.
g. A statement of Administrative Support/POC: Arrangement of office space, conference rooms, other duty relief while supporting the Board, cooperation of Center elements, physical elements of mishap site at control of board chairperson.
h. The source of funding for personnel, materials, travel, special tests and other resources as applicable.
i. Expectations of report outbrief attendance and who will make the final approvals for the investigation, CAP and closure of the mishap.
j. The appointing official shall use the following guidelines to determine the composition of the IA:
    (1) The members shall be impartial with respect to mishap activities.
    (2) All members shall be Federal employees except consultants.
    (3) The members shall not be from the direct chain of authority responsible for day-to-day or line management oversight of the facility, area, or activity involved in the mishap or have a vested interest in the outcome of the investigation.
    (4) Members shall have sufficient experience and technical expertise to understand the technology and management interfaces related to the mishap.
    (5) When needed, if the area of investigation expertise cannot be obtained within NASA, the IA's members may be appointed from Federal agencies having technical expertise in the area of investigation.
    (6) All members must have completed the training listed in 4.2.3 of SPLN-8621-0003.
    (7) The total number of voting members of the IA shall be an odd number. A minimum of five members, including Chairperson, is required for Type A Mishap. A minimum of three members, including Chairperson, is required for Type B Mishap.
    (8) The nominal appointed MIT size for a Type C mishap or Center-declared high-visibility mishap or close-call is three members. A single II is the nominal sized and

appointed IA for a Type D mishap or close call. The AO has the discretion to deviate based on the complexity of the incident or other factors.

(9) Representatives from SSC SMA, Office of Communications and Chief Counsel shall be appointed as advisors to the IA, as required.

(10) A NASA or resident NASA contractor physician shall be a member of the MIB if death involved (Type A), and/or as a member or advisor if injury or substantial human factors are involved. The physician must be a flight surgeon if the flight crew involved.

APPENDIX I. WITNESS STATEMENT FORM

Witness Statement

It is important that witnesses be interviewed as soon as possible after the occurrence of a mishap in order to obtain the best recall of information that might assist in the identification of causal factors. Immediately after a mishap, this form must be completed by the witness. The written statement is intended to provide the witness's account of the mishap including a description of the sequence of events, facts, conditions, and/or causes of the mishap. The witness will give the completed form directly to a member of the NASA SSC SMA or the NASA Interim Response Team.

The purpose of the NASA safety mishap investigation is to identify the proximate cause(s) and root cause(s) of the mishap and to develop recommendations that prevent the occurrence of similar mishaps. The NASA safety mishap investigation process conducted per the NASA Procedural Requirements 8621.1 (NPR 8621.1) does not assess blame and is completely separate from any proceedings the Agency may undertake to determine civil, criminal, or administrative culpability or liability.

Your statement is entirely voluntary, but we hope that you will assist the IA to the maximum extent of your knowledge of this matter.

Your statement will be documented and retained as part of the mishap report background files but will not be publicly released with your name as part of the mishap report. The investigating authority will make every effort to keep your statement confidential and privileged to the greatest extent permitted by law.

Note: There are three circumstances when your statement may be released from the control of the investigating authority and would no longer be considered privileged:

1. When the investigating authority or NASA is ordered to release the statement by a court or administrative body outside NASA.

2. When the Inspector General (IG) makes a written request to the NASA Administrator. The IG, by law, is permitted access to all records, reports, audits, reviews, documents, papers, recommendations, or other material available to the applicable establishment which relate to programs and operations. The Office of Inspector General rarely makes this request. The IG respects and, as a general rule, will defer to the disclosure restrictions attendant to NASA mishap investigations. Upon receipt of such testimonial information, the IG will consider it to be

confidential witness statement and will treat it as such to the full extent required by the Inspector General Act of 1978.

3. When NASA experiences the loss of the International Space Station, or its operational viability, or the loss of any other U.S. space vehicle carrying humans. For these cases, by law, an independent Presidential Commission will be formed and the contents of this written statement may be provided to the Commission.

I have read the above information and understand that NASA will make every effort to protect the information provided to the greatest extent permitted by law, and I understand the three circumstances when my statement may be released.

`Signature: _____

Witness Statement

Date and Time of Witness Statement: _____

Witness

Name: _____ Phone: _____

Email: _____

Company/Department: _____

Job Title: _____Years in Job: _____

Time of Mishap: _____

Your Location at Time of Mishap. (If needed, you may draw on the back of this form to show your location in reference to other objects, equipment, or people):

Building and Room: _____

Additional Details About Your Location:_____

_____

Your Activity At Time of Mishap: _____

Please describe to the best of your memory **what happened** at the time of the mishap. You may write on the back of this form (or request another page) if you need additional space.

Please describe **why** you think the mishap occurred.

Witness Signature: _____ DATE: _____

APPENDIX J. Civil Servant Appointed Investigating Authority Checklist – Type C and D Mishaps and Close Calls

Civil Servant IAs shall use this checklist to ensure all investigation activities were performed. This checklist is based on the requirements in NPR 8621.1 and applies to all civil servant Investigating Authorities (IA). In the case of any conflict the NPR takes precedence. This checklist applies to C and D mishaps and close call cases only.

	TRAINING FOR ALL IA MEMBERS	Date Completed	Notes
1	Have taken SATERN training Overview of Mishap Investigations (SMA-002-07)		
2	Have taken SATERN training Mishap Investigation Roles and Responsibilities (SMA-002-08)		
3	Have taken SATERN training Completing the Investigation and Mishap Report (SMA-002-09)		
4	Have taken SATERN training Introduction to Root Cause Analysis (SMA-002-10) *within the last two years*		
5	Have taken SATERN training Interim Response Team Training (SMA-002-11)		
6	Have taken SATERN training Introduction to Human Factors In Mishap and Close Call Investigation (SMA-001-07)		
	TRAINING FOR AT LEAST ONE MEMBER OF THE IA		
7	Have taken classroom training NASA Root Cause Analysis (SMA-SAFE-OSMA-4003) or SATERN electronic equivalent (SMA-002-14) *within the last five years*		
	TRAINING FOR HUMAN FACTORS MEMBER OF THE IA		
8	Have taken classroom training Human Factors in Mishap Investigation (SMA-SAFE-OSMA-4004) or SATERN electronic equivalent (SMA-002-15) *within the last 5 years*		
	REVIEW BEFORE PROCEEDING		

9	If appointed, the chair of a team and all independent investigators review the appointment letter and understand the obligations and deadlines		
10	All IA review the witness statement form and included instructions in SPLN-8621-0003 in Appendix I		
11	Review SPLN-8621-0003 on investigation procedures		
	OBTAIN BEFORE PROCEEDING		
12	All evidence, including witness statements, from the Interim Response Team.		
13	A location for meeting for the duration of the investigation where investigation tools can be kept, if needed.		
	INDENTIFY BEFORE PROCEEDING		
14	Safety office liaison for logistics, supplies, etc.		
15	Ex-officio (default is the mishap manager)		
	AT THE START OF THE INVESTIGATION		
16	MIT Lead - Meet with team to assign roles and establish a plan for meetings, viewing the scene and completing requirements of the appointment. (N/A if an MIT is not appointed)		
17	If there is still a secured mishap scene, verify that the mishap/close call site is secure and free of hazards.		
18	If there is still a secured mishap scene, assume control of the mishap/close call scene from the IRT lead or other IC.		
19	Verify from the IRT lead that all evidence has been impounded and moved to a secured location.		
20	Gain access to the evidence collected. Use the Impound Inventory and Release Form in Appendix D to transfer ownership.		
	DURING THE INVESTIGATION		
21	Collect additional evidence as needed being sure to use witness statements for all interviews. Use the Impound Inventory and Release Form in Appendix D to keep a record of physical evidence.		
22	Document the timeline of events.		

23	Release the scene once the configuration and all other relevant information has been gathered and its use will no longer compromise the investigation.		
24	Analyze the evidence.		
25	Create a fault tree or an equivalent analysis to identify all potential cause(s) and contributing factor(s) to the mishap and the relationships among them. Analyze all potential technical and human causes.		
26	Evaluate all information collected during the course of the investigation, including, but not limited to, physical evidence, witness statements and testimony, and analytical results from testing and analysis; draw conclusions concerning what happened and why it happened; and document these as investigation findings.		
27	Document facts that support each finding.		
28	Provide recommendations that address proximate, intermediate, contributing and root causes to prevent recurrence of the incident or potential similar incidents.		
29	Calculate or estimate the direct cost of the mishap/close call using the direct cost worksheet in Appendix B.		
	TO CONCLUDE THE INVESTIGATION		
30	Write a report that includes the following: a list of the team, the appointment letter, the NMIS case number and classification, a description of the event and associated facts, the type of data gathered and data analysis, finding and recommendations, and minority reports if applicable. Use the template provided by the Mishap Manager.		
31	Distribute the report for review as specified in the appointment letter. Include the Office of Chief Counsel and the Office of Communications for review for public release.		
32	Present findings at an outbrief to the AO and other audience as specified in the appointment letter at least one week after the report was distributed.		

33	Obtain concurrence that the investigation was satisfactory at the outbrief from the AO and report reviewers. The AO will then release the IA.		
34	Turn over all materials including the report, presentation, evidence and analysis to SMA. Use the Impound Inventory and Release Form in Appendix D to transfer the evidence.		

APPENDIX K. Aircraft Investigating Authorities

		CONSEQUENCE											
		Injury/Illness of Customer Employees or Damage to Customer Property	Injury/Illness of NASA Civil Service Employees By Law Employer Must Investigate Injuries of Employees	System Leaves Range	Damage to NASA Property On NASA Govt. Facility Associated with Activity	Damage to NASA Loaned Govt. Property Or Payload Inside Range Associated with Activity	Damage to Public or Govt. Property Inside Range NOT Associated with Activity	Damage to Govt. Property Outside Range	Damage to Public Property Outside Range	Fatality or Serious Injury to Civil Servants (not crew) Inside Range NOT Associated with Activity	Fatality or Serious Injury to Civil Servants (not crew) Outside Range	Fatality or Serious Injury to Public Inside Range (e.g., visitors)	Fatality or Serious Injury to Public Outside Range
Pre-Flight and Post-Flight Ground Activities	Activity At SSC Location - on SSC	NASA unless NASA assigned investigation responsibility to Customer	NASA		NASA unless NASA assigned investigation responsibility to Customer	Customer							
Flight	Operations within both restricted and uncontrolled airspace	**FAA or NTSB & NASA for personnel injury. Customer for customer property damage**	**FAA or NTSB & NASA**	**FAA or NTSB**	**FAA or NTSB & NASA**	Customer	**FAA or NTSB & NASA**	**FAA or NTSB**	**FAA or NTSB**	**Potential FAA or NTSB & NASA**	**FAA or NTSB**	**FAA or NTSB & NASA**	**FAA or NTSB**
Recovery and/or Landing	Outside Range	**FAA or NTSB & Customer**	**FAA or NTSB & NASA**		**FAA or NTSB & NASA**		**FAA or NTSB & NASA**	**FAA or NTSB**	**FAA or NTSB**				**FAA or NTSB**

NOTE: Customer Types include NASA (SSC or other Center), military, other government agencies and academic or commercial partners. Aviation operations of academic or commercial partners are not necessarily public aircraft operations, and when deemed civil aircraft operations via NASA SSC legal review investigations may be delegated to the Customer.